MODULATION OF CASPASE-3 ACTIVITY IN HUMAN LEUKEMIA (HL-60) CELLS BY GARLIC EXTRACT

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Abstract: Several cultures use garlic for medicinal purposes. Ancient Egyptian records revealed that garlic is used as remedy for a variety of diseases. Several pharmacological studies indicated that sulfur-containing garlic compounds have anti-mutagenesis and anti-carcinogenesis effects. In addition, supplement with garlic has many beneficial health effects. Recent studies in our laboratory indicated that oxidative stress plays a key role in water soluble garlic extract-induced cytotoxicity in human cancer cells. Hence, the aim of the present study was to evaluate whether garlic extract exposure modulate caspase-3 activation in human leukemic cell line. To achieve our specific aim, HL-60 cells were treated with different doses of garlic extract for 24 h prior to flow cytometry assessment. We observed a marked and dose-dependent significantly (P <0.05) increased in caspase-3 positive cells (apoptotic cells) compared to the control. Overall, our results indicate that active caspase-3 is involved in garlic extract-induced apoptosis in human leukemia (HL-60) cells. We concluded that the pharmacotherapy of garlic may be associated through induction of moderate toxicity and activation of caspase-3, a key component of apoptotic machinery. However, further investigations are needed to determine whether or not specific activators of caspace-3 may be directly associated with the induction of cell death.

Key Words: Garlic extract, flow cytometry, caspase-3, pharmacotherapy, leukemia

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